

METHODS OF SAMPLING AND TESTING
MT 301-04
METHOD OF TEST FOR
SIEVE ANALYSIS OF MINERAL FILLER AND HYDRATED LIME

1 Scope:

1. This method of test covers the sieve analysis of mineral fillers and hydrated lime used in road and paving materials.

2 Apparatus:

- 2.1 *Balance* – The balance shall be sensitive to 0.1 grams.
- 2.2 *Sieves* – The sieves shall conform to MT-405 (Sieves for Testing Purposes), and shall include the 30 mesh (0.600 mm) sieve, the 80 mesh (0.180 mm) sieve, and the 200 mesh (0.075 mm) sieve.
- 2.3 *Oven* – The oven shall be capable of maintaining a temperature of $230 \pm 9^{\circ}\text{F}$ ($100 \pm 5^{\circ}\text{C}$).
- 2.4 *Container* – A pan or vessel of a size sufficient to contain the sample covered with water and to permit vigorous agitation without inadvertent loss of any part of the sample or water. A stainless steel container with a diameter of approximately 9 inches, a height of approximately 10 inches, and a convenient handle has been found satisfactory).

3 Sample:

- 3.1 Thoroughly mix the mineral filler or hydrated lime in the field sample and then obtain a test sample for sieve analysis using a spoon or small scoop. A minimum mass of approximately 100 grams of dry material is required for each test.

4 Procedure:

- 4.1 After drying the test sample to constant mass at a temperature of $230 \pm 9^{\circ}\text{F}$ ($110 \pm 5^{\circ}\text{C}$) and weighing to the nearest 0.1 gram, the sample shall be placed in the container and covered with sufficient water to assure a thorough separation of the material finer than the 200 mesh (0.075 mm) sieve from the coarser particles. The contents of the container shall be agitated vigorously and the wash water poured immediately over a 200 mesh (0.075 mm) sieve.

Note 1 – A spray nozzle or a piece of rubber tubing attached to a water faucet may be used for the washing. The velocity of the water, which may be increased by pinching the tubing, shall not be sufficient to cause any splashing of the sample over the sides of the sieve.

- 4.2 The agitation should be sufficiently vigorous to result in the complete separation, from the coarse particles, all particles finer than the 200 mesh (0.075 mm) sieve, and bring the fine material into suspension in order that it will be removed by decantation of the wash water. Care should be taken to avoid, as much as possible, the decantation of the coarse particles of the sample. The operation shall be repeated until the wash water is clear.

Note 2 – the lack of adequate water pressure for agitation in the field test trailers allows for slight finger manipulation of the sample in the wash container to insure adequate separation of material finer than the 200 mesh (0.075 mm) from the coarser material. However, care must be taken to avoid the breaking down of larger particles. Under no circumstances is finger manipulation of the sample on the sieves allowed.

- 4.3 All material retained on the 200 mesh (0.075 mm) sieve shall be returned to the washed sample. The washed sample shall be dried to constant mass at a temperature of $230 \pm 9^{\circ}\text{F}$ ($110 \pm 5^{\circ}\text{C}$) and weighed.

4 Procedure: (continued)

- 4.4 Sieve the washed sample over a nest of sieves consisting of the 30 mesh (0.600 mm), 80 mesh (0.180 mm), and 200 mesh (0.075 mm). The weights of material retained on each of the above sieves shall be calculated as a percent of the original sample.

5 Report:

- 5.1 Report the results of the sieve analysis as the total percentage passing each sieve, expressed to the nearest 0.1 percent.